4.2.7. Field of Regard

4.2.7.1. Purpose

The purpose of this test is to plot the field of regard for the FLIR and to assess its utility for detecting targets at mission relatable angles from the aircraft centerline.

4.2.7.2. General

The IFOV tests determined the angular measurements of the unscanned FLIR display, while the slew limits tests determined the maximum angles over which the center of the FLIR display could be slewed horizontally and vertically. A third limitation to the areas over which targets can be detected and displayed is the portion of the aircraft structure that obstructs the FLIR display. The graphical depiction of these obstructions and limits is the rectilinear plot which has linear scales of 180° left and right and 90° up and down from the center of the FLIR display. Figure 16 is a sample rectilinear plot. For the sample system, the center of the rectilinear plot will be placed over a line parallel to the fuselage reference line and translated to the center of the FLIR slew axis since this is the line upon which the crosshairs are centered when set at zero and zero on the pointing angle scales. The pointing angle scales will be used to quickly determine the angles to the obstructions but will be corrected for alignment errors using the plots derived in the pointing angle accuracy tests.

4.2.7.3. Instrumentation

A blank rectilinear plot and data cards are required for this test. A voice recorder is optional.

4.2.7.4. Data Required

Record the angular positions of the corners of each obstruction to FLIR visibility derived from the FLIR display. Draw a sketch connecting the plotted positions of the obstruction corners. Make qualitative comments concerning the utility of the FLIR field of regard for detecting the target and keeping it in view during evasive maneuvers and during post-delivery maneuvers.

4.2.7.5. Procedure

Following the FLIR pointing accuracy test, set WFOV for the FLIR and set the aircraft flaps to a position consistent with a high speed attack. This usually requires full up flaps. The aircraft should be loaded with drop tanks and external ordnance if normally carried during an attack. Use a blank rectilinear plot to mark the positions of the corners of the obstructions. Use the positions derived from the vertical and horizontal FLIR position scales to determine the corresponding positions marked on the horizontal and vertical scales of the plot. Sketch the connecting lines and verify the picture on the plot corresponds with the display. Label the obstructions to visibility. Note the positions where the landing gear would be absent when airborne. These can be deleted from the plot if desired.

When airborne, during mission relatable attacks, note the effects of the obstructions upon FLIR utility for ingress navigation, target detection and target visibility during evasive maneuvering before delivery and during post-delivery maneuvers. Repeat the test using different attack modes as time allows. The tests should be performed with mission relatable external drop tanks and carrying mission relatable real or inert ordnance.

4.2.7.6.Data Analysis and Presentation

Transpose the plot of the obstruction points to a second rectilinear plot, applying the corrections in horizontal and vertical azimuth indications found during the pointing accuracy tests. Add the visibility limitations imposed by the horizontal and vertical scan angle limits as appropriate. Re-sketch the obstructions and add the obstruction labels. The landing gear may be left in or taken out as desired. Relate the size and placement of the obstructions to FLIR visibility to the limitations they impose upon finding targets of opportunity around the aircraft and to the necessity to perform FLIR updates while also flying evasive maneuvers into the target area that may place the target into a blind area of the FLIR. Additionally, relate the size and placement of the obstructions to the requirement to maintain FLIR updates after weapons delivery for post-release guidance and post-attack damage assessment.

4.2.7.7.Data Cards

Sample data cards are provided as card 63.

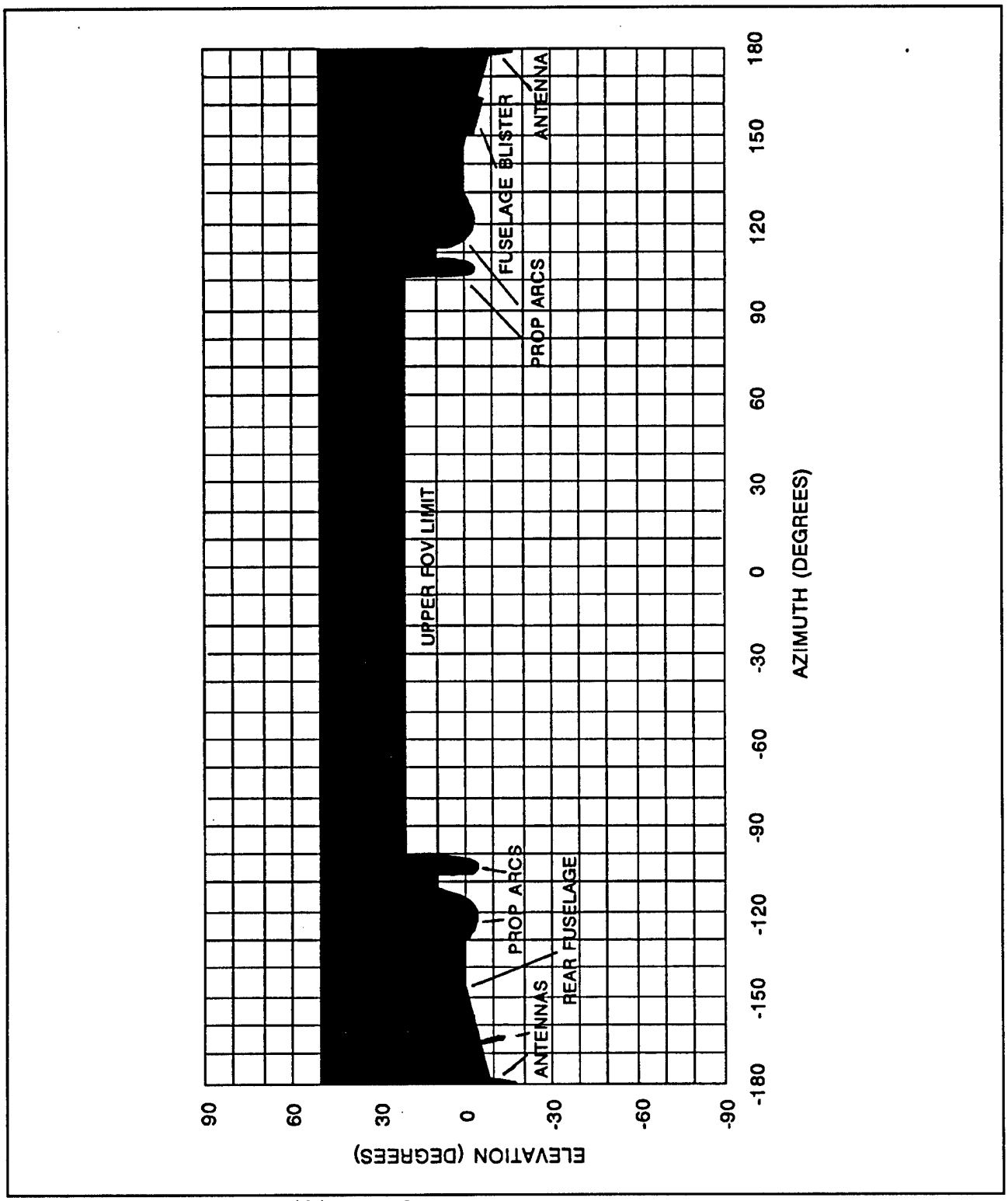


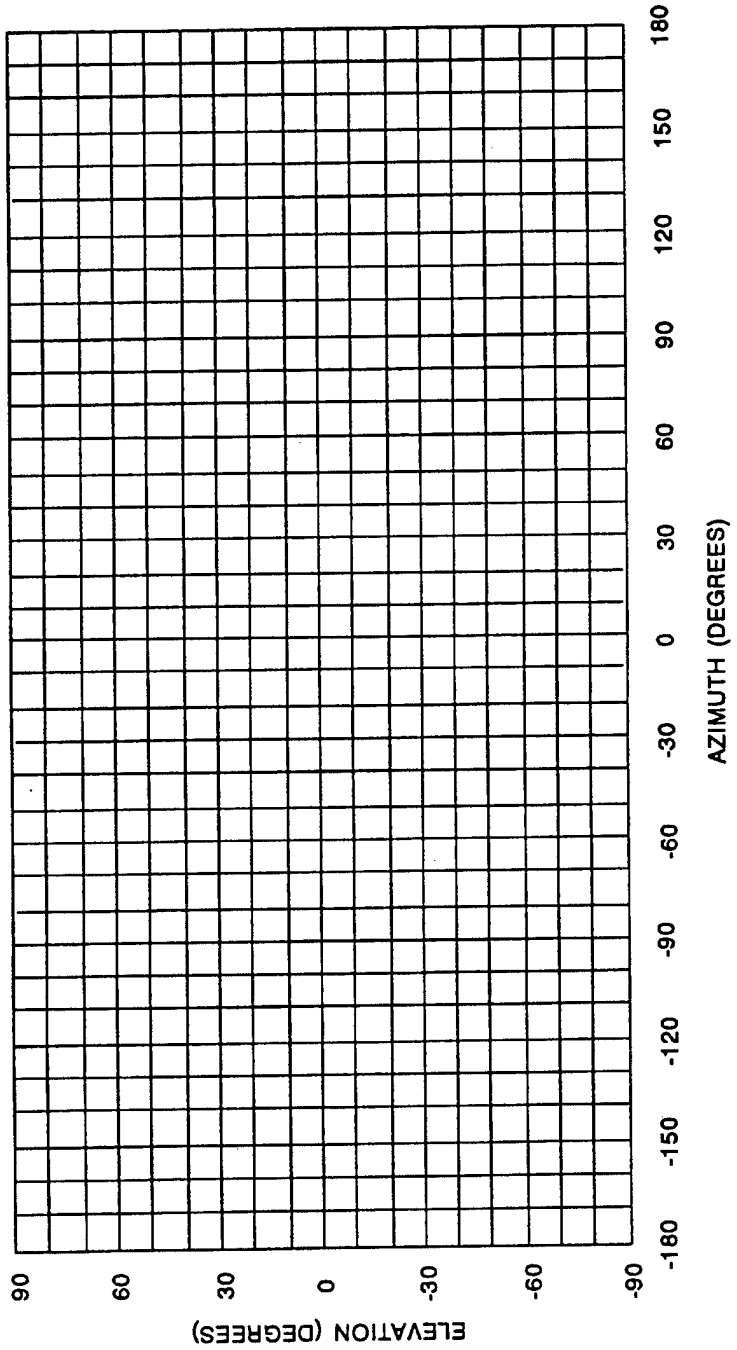
Figure 16: Sample Rectilinear Plot

260

CARD NUMBER ____

FIELD OF REGARD (GROUND TEST)

FLAP SETTINGS _____ EXTERNAL CONFIGURATION:



Card 63: Field of Regard Data Cards

CARD NUMBER ____TIME _____PRIORITY L/M/H

FIELD OF REGARD (AIRBORNE TEST)

[DESCEND TO ___ FEET AGL AND SET MACH=___. ACQUIRE THE _____ TARGET AND HEAD INBOUND, SELECTING THE NFOV AND GEOSTABLE MODE. PERFORM MISSION RELATABLE JINKING INBOUND AND THEN PERFORM A _____ DELIVERY WITH POST-DELIVERY EVASIVE MANEUVERS. NOTE IF THE TARGET BECOMES OBSCURED BY AIRCRAFT STRUCTURES. REPEAT IN THE _____ ATTACK MODE.]

TYPE DELIVERY _____

POINT IN DELIVERY WHERE TARGET LOST:

STRUCTURE OBSCURING TARGET:

DESCRIBE MANEUVER:

TYPE DELIVERY _____

POINT IN DELIVERY WHERE TARGET LOST:

STRUCTURE OBSCURING TARGET:

DESCRIBE MANEUVER:

Card 63: Field of Regard Data Cards (Continued)